IN THE CLAIMS:

1. (Previously Presented) A method executed in hardware for simulating events in a physical system comprising the steps of:

a) employing hardware that comprises N processing elements (PEs) that can communicate with each other;

b) subdividing said physical system into N subsystems and assigning a different subsystem of said subsystems to each of said N PEs;

c) in a simulation step, each of said PEs concurrently simulating a respective block of events that occur in each respectively assigned subsystem, where said block includes M edge events, where M is approximately e $\log_e N$, e is approximately 2.71828, and an edge event is an event whose simulation in a processing element is directly affected by information originating in another processing element;

repeating step c) a chosen number of times; and

outputting results of said simulations from each of said N PEs.

2. (Previously Presented) The method of claim **1** where said simulation step comprises one or more iterations.

3. (Previously Presented) The method of claim **2** where each of said iterations comprises a simulation phase followed by a communication phase and an assessment phase.

4. (Original) The method of claim **3** where, in each communication phase, each of said PEs shares information with one or more other PEs from said N PEs, which information is needed by said other PEs to simulate edge events of said other PEs.

5. (Original) The method of claim **4** where said information shared by each PE in a communication phase of an iteration is related to events simulated by said each PE in said iteration.

6. (Original) The method of claim **4** where said assessment phase carried out by each of said PEs comprises the steps of

determining whether the existence of a simulation error can be excluded, and

directing that another simulation iteration is to take place when the existence of a simulation error cannot be excluded.

7. (Previously Presented) The method of claim **6** further comprising a floor advancement step that is carried out in each of said PEs when said step of determining in said assessment phase concludes that there are no simulation errors in a simulation iteration, where the advancement step advances a simulation floor time of a present simulation step to form a modified simulation time floor, for simulating another block of M events in a next simulation step.

8. (Original) The method of claim **6** further comprising a step of advancing a simulation floor time from a simulation floor time of a present simulation step, to form a modified simulation floor time, for starting from said modified simulation floor time the simulation of another block of M events in a next simulation step, when said step of determining in said assessment phase concludes that there are no simulation errors in said present simulation step.

9. (Original) The method of claim **8** where said modified simulation floor time corresponds to the earliest simulation time of the M^{th} edge event simulated by said N PEs in said present simulation step.

10. (Original) The method of claim **4** where events are simulated seriatim in each simulation phase.

11. (Original) The method of claim **10** where for simulating a second event following a simulation of a first event,

a time interval is identified between a simulation time of said first event and a simulation time of said second event, and

said second event is identified for simulation.

12. (Original) The method of claim **11** where said second event is identified for simulation following a step of accounting for simulation of said first event and simulation of events in said other PEs from said N PEs.

13. (Original) The method of claim **12** where said accounting is based on present knowledge of states of said other events.

14. (Previously Presented) The method of claim **12** where said accounting for simulation of events in said other PEs from said N PEs accounts for events simulated during said time interval.

15. (Original) The method of claim **11** where said second event is identified by employing a first random number.

16. (Original) The method of claim **11** where said time interval is identified with a second random number.

17. (Original) The method of claim **16** where said second random number is set to said first random number.

18. (Original) The method of claim **15** where said first random number is derived from a random variable having a uniform distribution.

19. (Original) The method of claim **15** where the seriatim simulation of each event in said block of M events, in a first iteration starting from a given simulation floor time, employs an independently derived random number from said random variable, forming thereby a sequence of random numbers, and simulation of said block of M events in all subsequent iterations starting from said given simulation floor time employs said sequence of random numbers.

20. (Original) The method of claim **18** where the sequence of random numbers employed in one simulation step is different from a sequence of random numbers employed in another simulation step.

21. (New) Apparatus that includes N interacting processing elements (PEs), the improvement characterized by:

each of said N PEs storing a specification of a subsystem of a system composed of interacting subsystems; and

said N PEs (a) executing a selected number of simulation steps, and in each simulation step each of said PE's simulates a block of operational events of its associated subsystem, where a block contains M edge events, where M is approximately equal to log N, and an edge event is an event whose simulation in a processing element is directly affected by information originating in another processing element, and (b) outputting results of the simulations.

22. (Currently Amended) A storage element <u>that is adapted to interact with a processing element</u> comprising:

a first <u>software</u> module that, when executed in a processor, simulates operational events of a stored subsystem that is part of a system of interacting subsystems, primarily in blocks that contain M edge events, in addition to non-edge events, where M is approximately equal to log N, and an edge event is an event whose simulation in a processing element is directly affected by information originating from simulations by another module that is substantially the same as said first module, which other module is executed in another processor; and

a second <u>software</u> module that outputs simulated operational events resulting from execution of said first module.

23. (Previously Presented) The storage element of claim **22** further comprising a third module that communicates with said other module.

24. (New) The storage element of claim **23** further comprising a fourth module that assesses whether, based on information received by said third module, any of said M edge events need to be re-simulated.